



Introduction to the Internet of Things

Welcome to the Digital Transformation

Overview Presentation

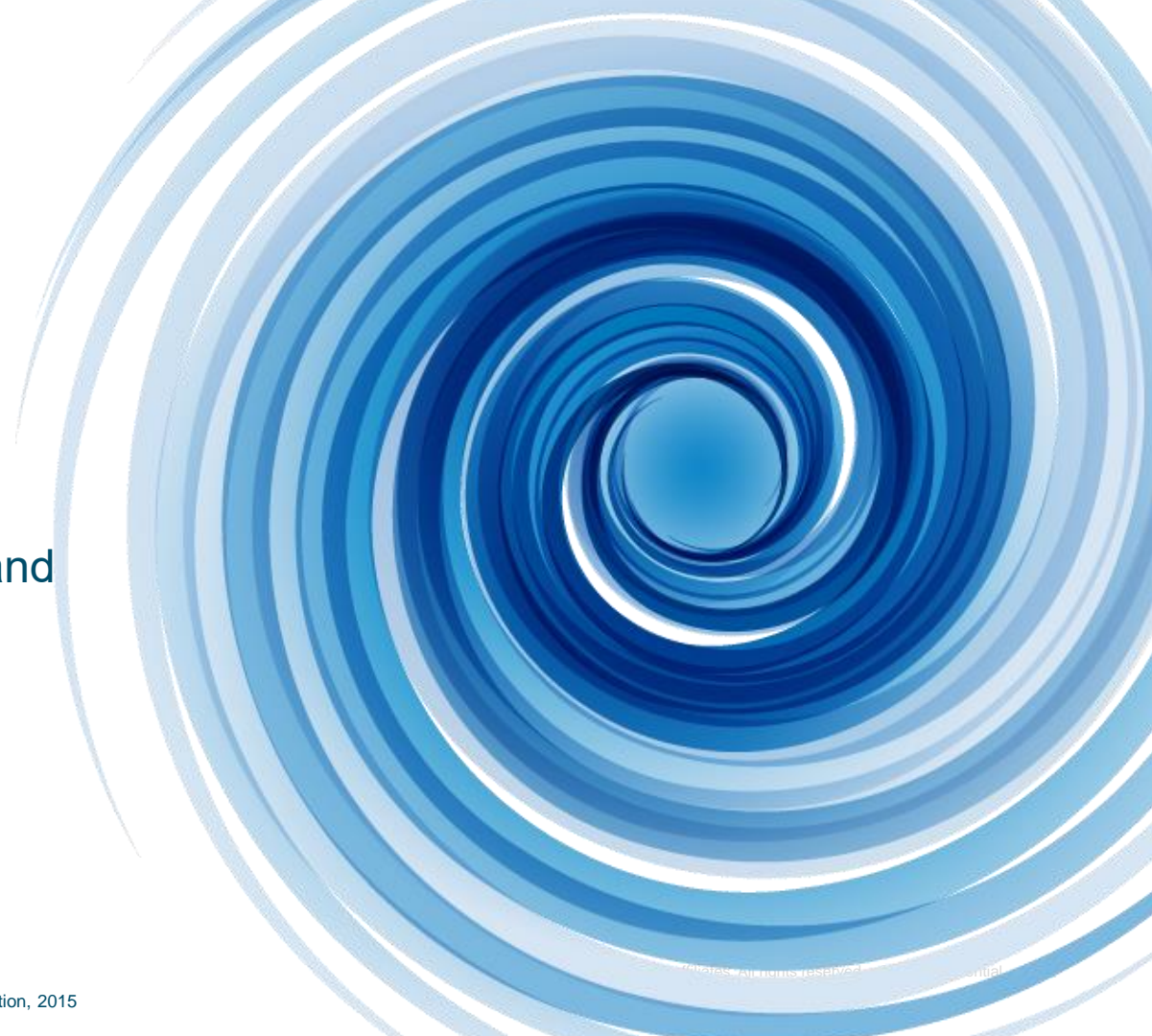
Version 2.0

July 2018



Digital Transformation

The change that occurs when new digital technologies and business models impact a company's value proposition and market position

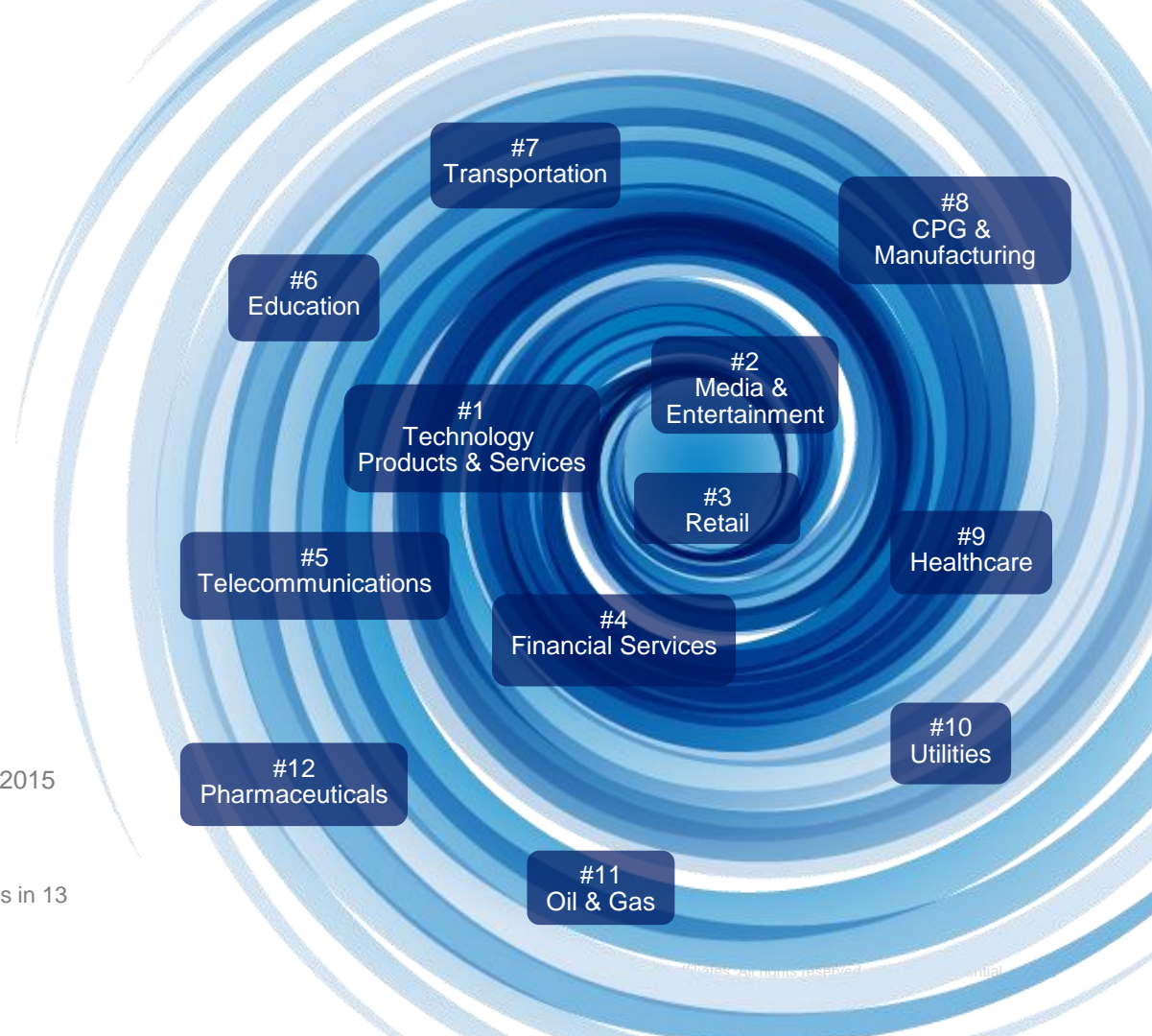


Digital Disruption

- Digital Disruption will impact all major industries
- 75% of businesses will become digital by 2020
- The average time for disruption is 3 years

Global Center for Digital Business Transformation, 2015

- Cisco co-founded Global Center for Digital Business Transformation group
- Interviewed 900 business leaders across 12 industries in 13 countries





The world's largest ride provider
owns no vehicles



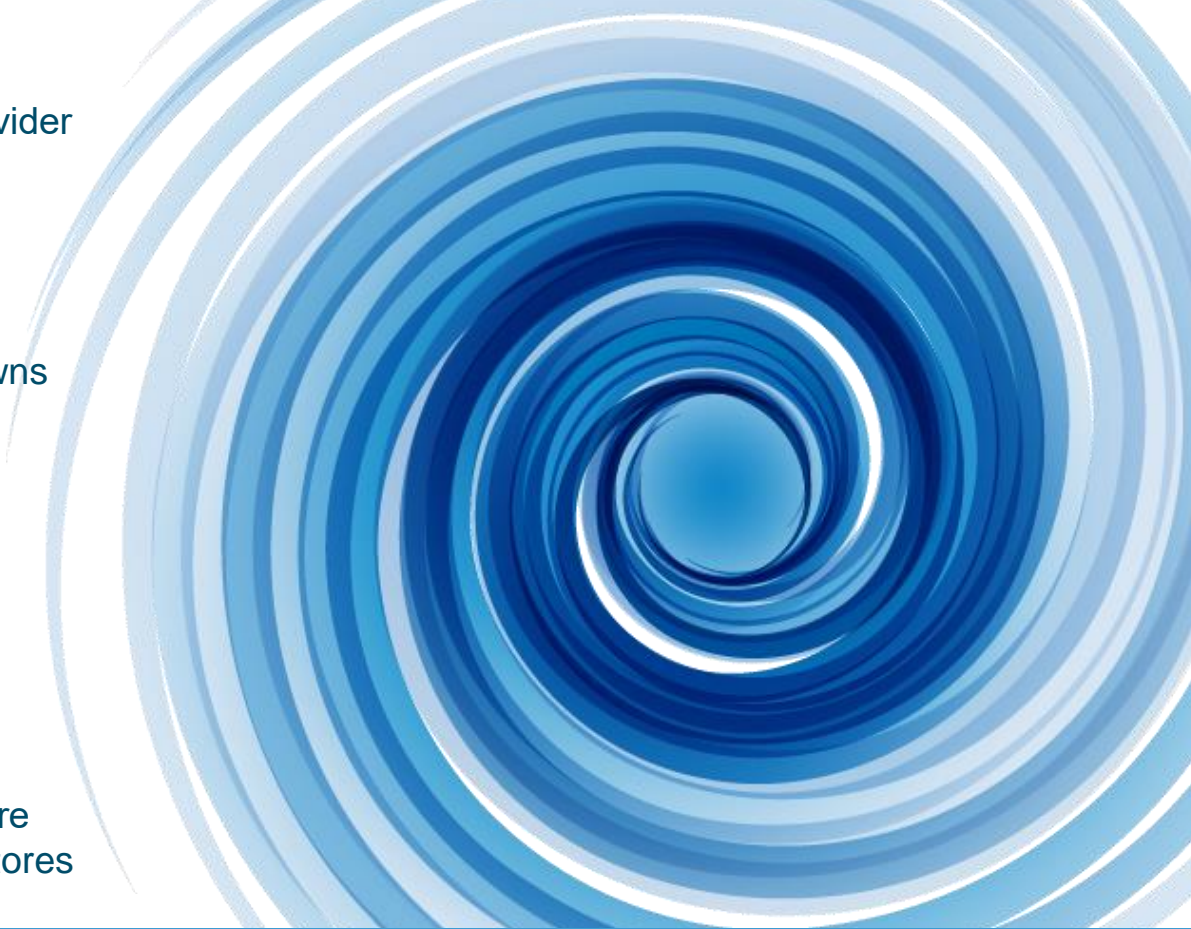
The world's largest
accommodation provider owns
no real estate



The world's largest movie
provider owns no theater



The world's largest bookstore
owns no brick and mortar stores



“Digital disruption will displace 40% of incumbent companies in the next 5 years.”

- John Chambers, Cisco 2016 Partner Summit

Forces of Digital Disruption

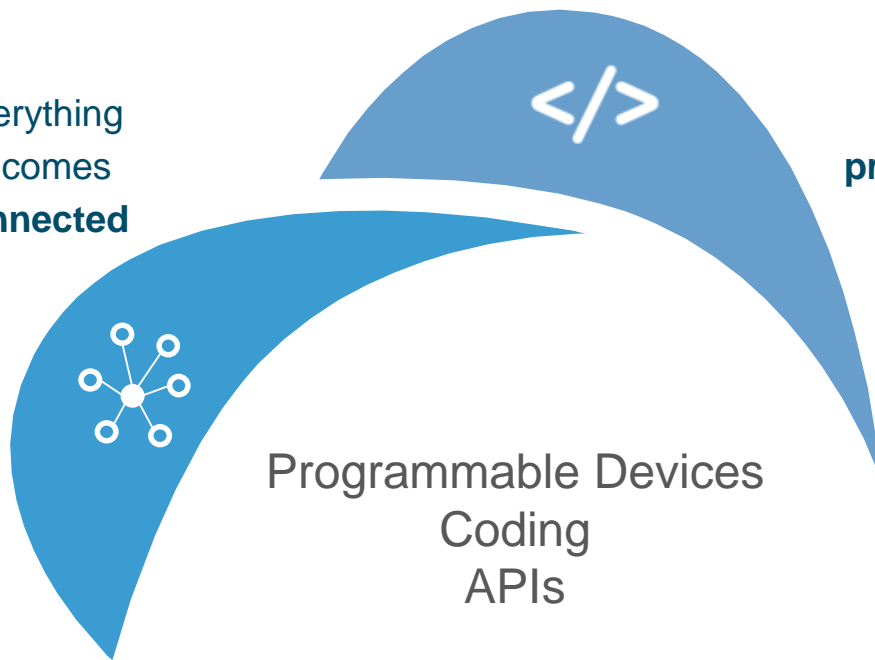
Everything
becomes
connected



Sensors & Actuators
Internet of Things
Fog & Cloud

Forces of Digital Disruption

Everything
becomes
connected



Everything
becomes
programmable

Forces of Digital Disruption

Everything
becomes
connected



Everything
becomes
programmable



Everything
generates
data

Big Data
Data Analytics
Data Visualization

Forces of Digital Disruption

Everything
becomes
connected



Everything
becomes
programmable



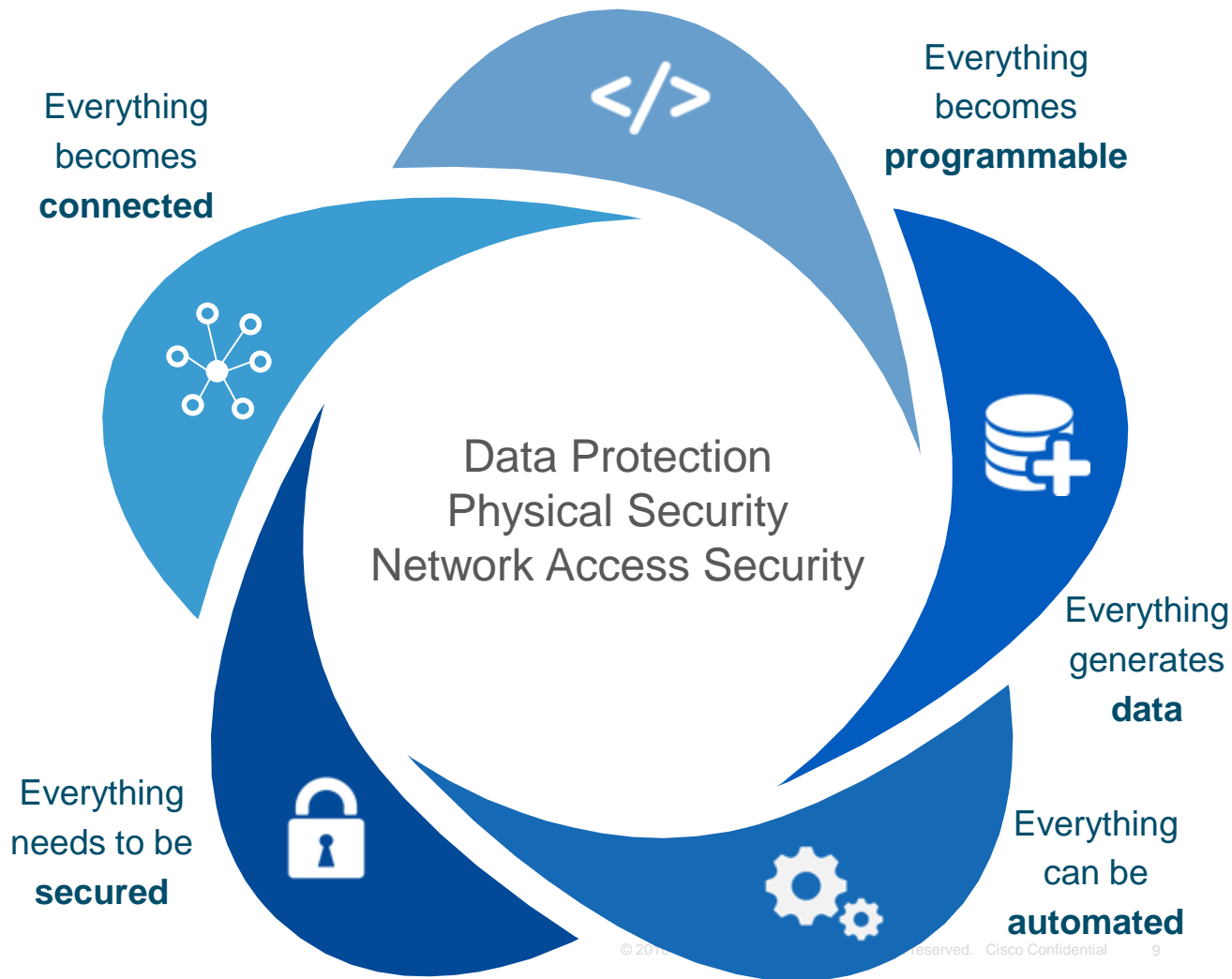
Everything
generates
data

Everything
can be
automated



Machine Learning
Artificial Intelligence
Intent-Based Networking

Forces of Digital Disruption



Forces of Digital Disruption...

...enable digital transformation in every industry

Everything becomes connected



Everything becomes programmable



Everything generates data

Everything can be automated



Everything needs to be secured



Introduction to IoT

Course Overview

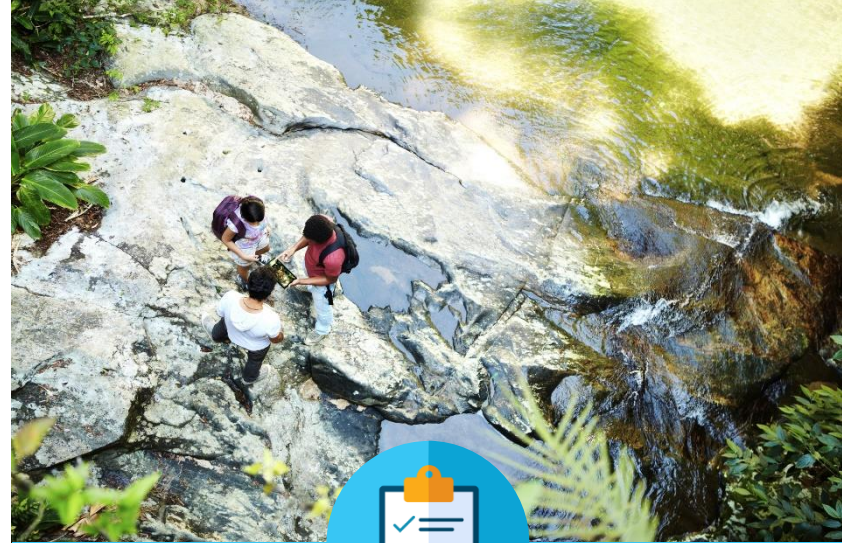
Students learn about the Internet of Things and how it enables the Digital Transformation along with emerging technologies such as data analytics, artificial intelligence and the increased attention to cybersecurity. The course also introduces the importance of the new Intent Based Networking that uses a software-driven approach and machine learning to be able to connect and secure tens of billions of new devices with ease.

Benefits

Student will have a comprehensive view of how these emerging technologies are shaping the digital business. They also have the opportunity to explore career opportunities in this new landscape.

Learning Outcomes

- Explain the meaning and impact of Digital Transformation.
- Apply basic programming to support IoT devices.
- Explain how data provides value to Digital Business and Society.
- Explain the benefits of automation in the digitized world.
- Explain the need for enhanced security in the digitized world.
- Discover opportunities provided by digital transformation.



Features

Target Audience: Secondary, Vocational, 2-year College, General audience

Prerequisites: None

Languages: English (translations use v1.x until v2.0 available)

Course Delivery: Self-paced and Instructor-led

Estimated Time to Complete: 20 hours

Recommended Insertion Points: A great start for any learning path, and way to introduce the digital transformation before or during any Foundational or Career Ready course.

Instructor Training: Not required

Introduction to IoT is a Exploratory Offering



Aligns to Certification



Instructor Training required



Self-paced

* Available within 12 months

Networking
Security
IoT & Analytics
OS & IT
Programming
Business
Digital Literacy

Exploratory

The digital transformation is...

Introduction to IoT

... applicable across domains!

Be Your Own Boss
Get Connected

Collaborate for Impact				
Introduction to Packet Tracer	Packet Tracer	Hackathons	Prototyping Lab	Internships
Foundational		Career-Ready		
Networking Essentials Mobility Fundamentals Emerging Tech Workshop: Network Programmability Using Cisco APIC-EM		CCNA R&S: Introduction to Networks, R&S Essentials, Scaling Networks, Connecting Networks CCNP R&S: Switch, Route, TShoot		
Cybersecurity Essentials		CCNA Security CCNA Cyber Ops		
IoT Fundamentals: Connecting Things, Big Data & Analytics, IoT Security* Hackathon Playbook				
NDG Linux Essentials IT Essentials		NDG Linux I NDG Linux II		
CLA: Programming Essentials in C CPA: Programming Essentials in C++ PCAP: Programming Essentials in Python Emerging Tech Workshop: Experimenting with REST APIs using Webex Teams		CLP: Advanced Programming in C CPP: Advanced Programming in C++		
Entrepreneurship				

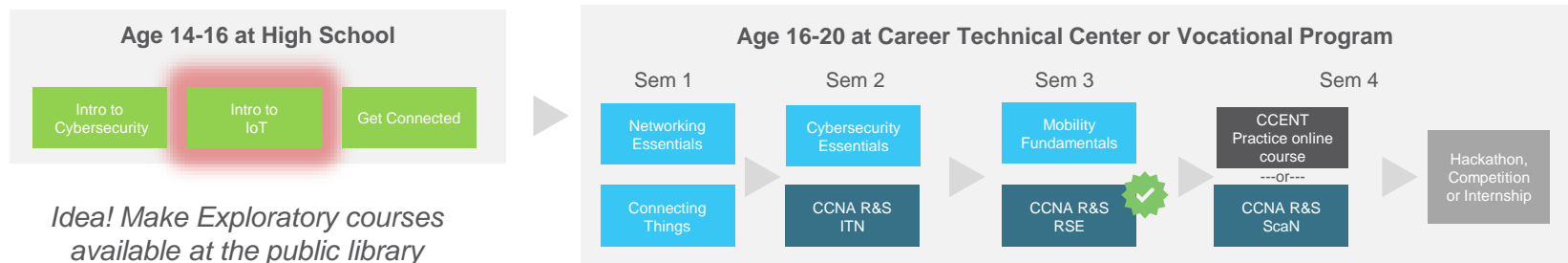
Networking Cyber Technology Pathway

Program: Networking Cyber Technology

Target Audience: High School articulated to Career Tech Center (CTC)

Considerations:

- Self-enroll/self-paced at secondary targeted for age 14-16 students or age 16-18 students interested in attending Career Tech Center or Vocational program
- Then interested students attend Career Tech Center/Vocational program that results in CCENT certification



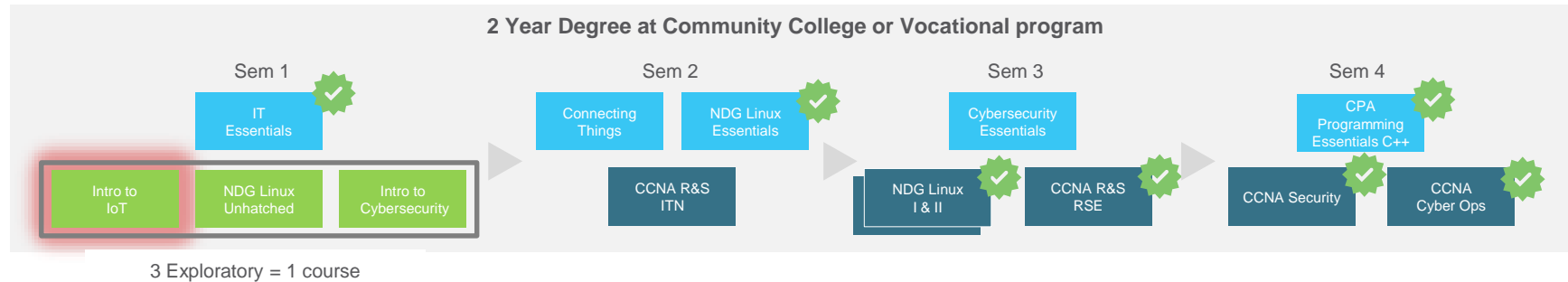
Cybersecurity Pathway

Program: Cybersecurity

Target Audience: 2-Year Post-Secondary or Secondary Vocational/Career Tech program

Considerations

- Networking + Programmability
- 3 self-paced in 1 semester = a “course”
- Variety of domains—building breadth
- Incorporate 6 IT certifications for stackable credentials—building depth



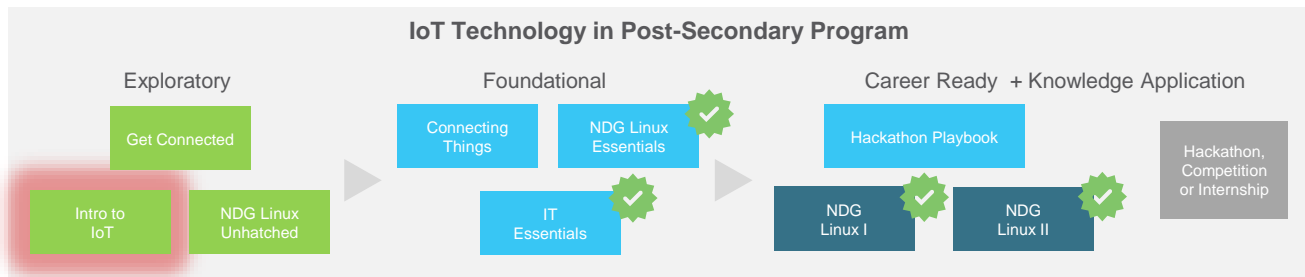
Non-Traditional Post-Secondary Pathway

Program: IoT Technology

Target Audience: Post-Secondary, Non-traditional students

Considerations

- Wide range of ages in post-secondary, age 18 to 65
 - Many returning workers have little to no network experience
- Start with Exploratory: small courses can get through quickly to build confidence
- Then build Foundational breadth
- Career-Ready + Knowledge Application provides stronger skills depth for employability



Course Outline

Chapter	Chapter Titles	Summary Description
1	Everything is Connected	<ul style="list-style-type: none">• Explain the meaning and impact of digital transformation.
2	Everything Becomes Programmable	<ul style="list-style-type: none">• Apply basic programming to support IoT devices.
3	Everything Generates Data	<ul style="list-style-type: none">• Explain how data provides value to digital business and society.
4	Everything Can be Automated	<ul style="list-style-type: none">• Explain the benefits of automation with machine learning and artificial intelligence in the digitized world.
5	Everything Needs to be Secured	<ul style="list-style-type: none">• Explain the need for enhanced security in the digitized world.
6	Educational and Business Opportunities	<ul style="list-style-type: none">• Discover job opportunities provided by the digital transformation, learning opportunities with NetAcad, and value of communities of interest engagements such as DevNet, Learning@Cisco and IEEE.

Chapter 1: Everything is Connected



Explain the meaning and impact of the digital transformation.

Chapter 1 highlights:

- See how Digital Transformation affects business, industry, and our daily lives.
- Explore the Internet of Things including sensors, actuators, and controllers and the how they are connected in a network.
- Sample Lab: Adding IoT Devices to a Smart Home



Chapter 2: Everything Becomes Programmable



Explain basic programming concepts to support IoT Devices.

Chapter 2 highlights:

- Programming language concepts.
- Introduction to flowcharts, visual programming in Blockly and Python.
- Sample Lab: Create a simple game with Python.
- Challenge Lab: Rapid Prototyping with a Raspberry Pi and Arduino.

```
x=input("Enter an integer between 0 and 1024 -- ")
x=int(x)
a=0
b=1024
test=True
if x == 0:
    print("Your number is 0, thank you for playing.")
    test=False
else:
    if x == 1024:
        print("Your number is 1024, thank you for playing.")
        test=False

    while test == True:
        m=int((a+b)/2)
        if m == x:
            print("Your number is ", m, ", thank you for playing.")
            break
        else:
            if m < x:
                a=m
            else:
                b=m
```

Chapter 3: Everything Generates Data



Explain how businesses gain value by collecting and analyzing Big Data.

Chapter 3 highlights:

- Describe Big Data by volume, velocity and variety.
- Explore the sources of Big Data, where it is stored and the role of distributed processing.
- Sample Lab: Using Excel to Forecast.



Chapter 4: Everything Can be Automated



Explain how digitization allows business processes to embrace a more intelligent automation.

Chapter 4 highlights:

- Explore how Artificial Intelligence and Machine Learning leverage Big Data to enable smarter business decisions.
- Sample Lab: Research Intent-Based Networking and Make an Intent Wish with DevNet
- Sample Lab: Automating Everyday Events



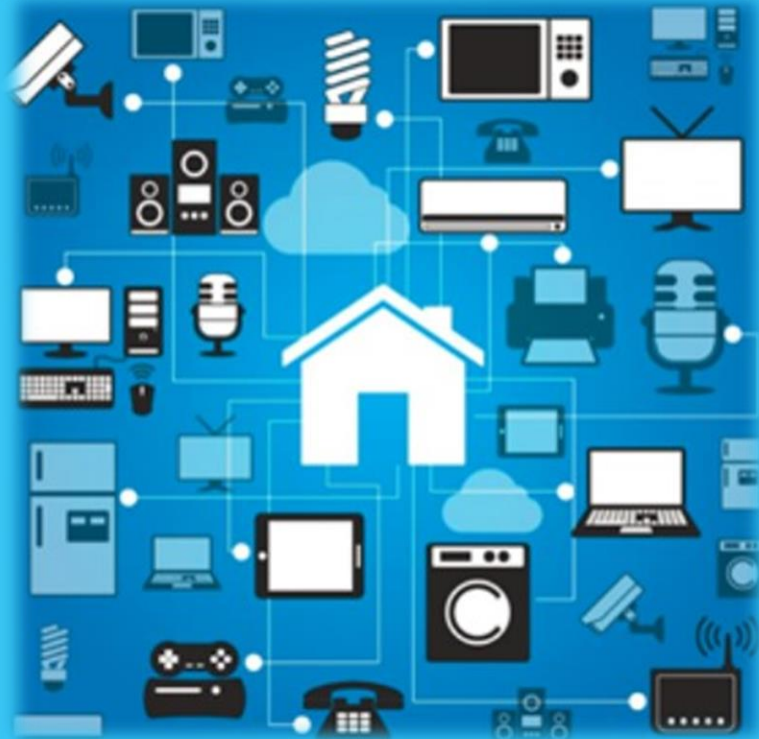
Chapter 5: Everything Needs to be Secured



Explain why security is important in the digitized world.

Chapter 5 highlights:

- What are the challenges and approaches to securing IoT devices.
- Learn best practices for protecting personal data and IoT devices.
- Sample Lab: Discover Your Own Risky Online Behavior



Chapter 6: Education and Business Opportunities



Here I am in the Digitized World, now where can I go from here?

Chapter 6 highlights:

- Explore the evolving job market opportunities in the increasingly digitized world.
- Learn the lifelong learning educational opportunities, importance of industry certifications and communities of Interest related to the IoT.
- Lab: Explore IoT Related Job and Learning Opportunities



Instructor Resources

<https://www.netacad.com/group/resources/intro-to-iot/2.0>

PPT

Instructor Powerpoints
Course Overview

FAQ

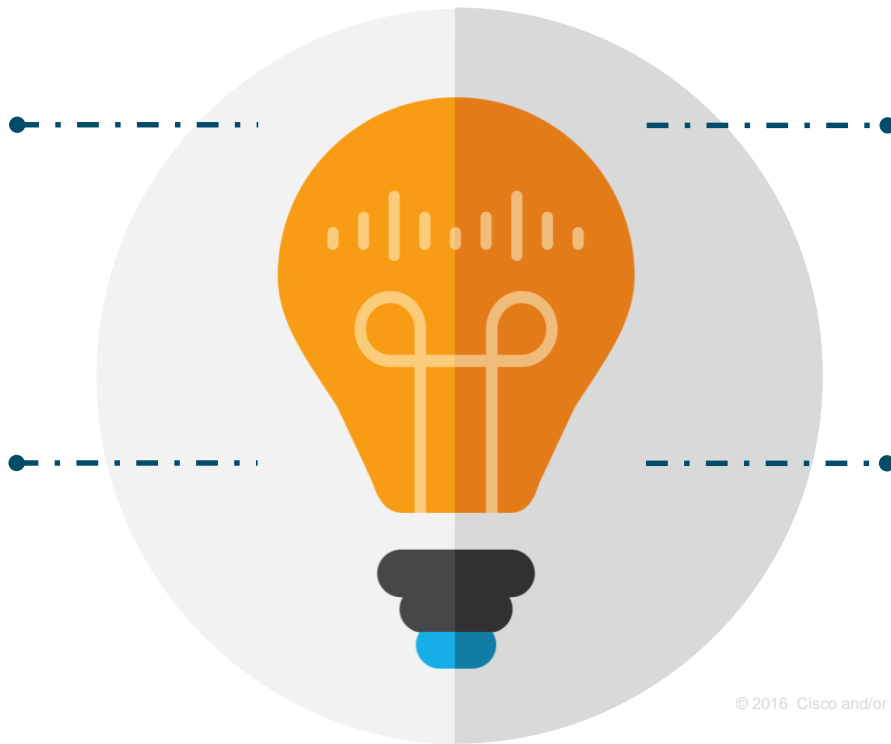
Frequently Asked
Questions

S&S

Scope & Sequence
Document

Plus

Additional information &
resources



Students Self-Enrollment and Support

Visit the [Introduction to IoT](#) page on Cisco NetAcad.com to enroll in the self-paced version of the course.

If you need assistance, post questions on the [Cisco Networking Academy Facebook page](#).



Instructors Enrollment and Support

Create the Introduction to IoT course and either enroll students using the same process as other NetAcad courses, or create a Self-enroll page with your own branding.

No instructor training is required.

If you need assistance, check the existing [Instructor's Resources](#). You can also contact your Academy Support Center (ASC).



